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Verification Report

"Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna"

Second Periodic (First Periodic JI Track 1) Verification
Period: January 01 to December 31, 2008

Report No. 1325775

January 15, 2010

TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstr. 199 - 80686 Munich - GERMANY

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Subject:	First Periodic JI Track 1 Verification
Executing Operational Unit:	TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 80686 Munich, Germany
Client:	ING Bank N.V. Loc. Code AMP.D.05.007 P.O. Box 1800 1000 BV Amsterdam The Netherlands
Contract approved by:	Dr. Sven Kolmetz
Report Title:	"Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna"
Number of pages	24 (excluding cover page and annexes)

Summary:

The certification body "Climate and Energy" of TÜV SÜD Industrie Service GmbH has been ordered by ING Bank N.V., Netherlands, to carry out the first periodic JI Track 1 verification of the JI Track 1 project "Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna".

The project has been determined positively by TÜV SÜD (Report No. 1042259, rev. 1 from 07/11/2008) and is already finally approved, registered and listed as JI Track 1 project in Ukraine by the UNFCCC (Reg. No. UA1000031) since March 23, 2009.

The verfication has been carried out by TÜV SÜD on the basis of JI standards. In this context, relevant documents are the "Marrakech Accords" and the recent rules and regulations as well as guidance given by JI-Supervisory committee for JI Track 2 projects.

The management of the coal mine Sukhodilska-Skhidna is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the final document "Monitoring Report; period 01/01/2008 to 31/12/2008 (Global Carbon, final document, submitted January, 2009).

The implementation of the project is delayed as described in the project implementation time shedule in the registered JI Track 1 project. TÜV SÜD confirms that the delayed implementation does not affect the additionality of the project due to a decrease in emission reductions.

There are two deviations from the finally approved Monitoring Plan of the registered PDD: Calculation of HEATcons,y instead of measurement and the use of the highest observed temperature and the lowest observed pressure in the standardisation procedure. TÜV SÜD confirms that both deviations are equivalent or even more conservative than the procedures described in the registered PDD.

The verifier confirms that the installed equipment being essential for generating emission reduction and for metering the data defined in the monitoring plan runs reliably and is calibrated appropriately. The monitoring system is in place and the project generates GHG emission reductions according to the approved methodology.

The verifier can confirm that the GHG emission reduction is correct and calculated conservatively for the whole monitoring period.

Our opinion relates to the project's GHG emissions reductions reported and related to the valid project baseline and monitoring, and its associated documents.

Based on the information we have seen and evaluated, TÜV SÜD confirms the following statement:

Reporting period: 1st JI period: January 01 to December 31, 2008.

Verified emission in the above reporting period:

Baseline Emissions:	**34,742 t CO2**
Project Emissions :	**3,690 t CO2**
Emission Reductions:	**31,052 t CO2**

The verification team also determined some areas of risks for the project in the context of the management system. Those issues indicated as "Forward Action Request" and should be submitted as indispensable information to the verification team of the next periodic verification.

Work carried out by:	Thomas Kleiser (Audit Team Leader), Andrey Atyakshev (GHG auditor, country expert) and Dr. Albert Geiger (expert and GHG auditor),Olena Maslova (GHG auditor, country expert and project manager)	**Internal Quality Control by:** Dr. Sven Kolmetz (scope 8, review) Rachel Zhang (Deputy head of CB)

Abbreviations

Abbreviations that have been used in the report here:

AIE	Applicant Independent Entity
CAR	Corrective Action Request
CHP	Combined Heat and Power
CH4	Methane
CMM	Coal Mine Methane
CO2	Carbon Dioxide
DFP	Designated National Focal Point
ERU	Emission Reduction Unit
FAR	Forward Action Request
GHG	Greenhouse Gas
GWP	Global Warming Potential
IETA	International Emission Trading Association
IPCC	Intergovernmental Panel on Climate Change
IVC	Initial Verification Checklist
JI	Joint Implementation
KP	Kyoto Protocol
MP	Monitoring Plan
MVP	Monitoring and Verification Protocol
NMHC	Non Methane Hydrocarbons
PDD	Project Design Document
PPA	Power Purchase Agreement
PVC	Periodical Verification Checklist
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	UN Framework Convention on Climate Change
VPS	Vacuum Pump Station
VVM	Validation and Verification Manual

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1 INTRODUCTION

The ING Bank N.V from the Netherlands has commissioned an independent verification by TÜV Industrie Service GmbH (TÜV SÜD) of the JI Track 1 project "Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna", Ukraine. The order includes the first periodic JI Track 1verification of the project for the period January 01, 2008 to December 31, 2008.

Verification is the periodic independent review and ex post determination by the Designated Operational Entity / Independent Entity of the monitored reductions in GHG emissions during the defined verification period.

This report summarizes the findings first periodic JI Track 1 verification. It is based on the Periodic Verification Report Template Version 3.0, December 2003, which is part of the Validation and Verification Manual (VVM) published by International Emission Trading Association (IETA) in 2003. Furthermore, the report is based on the actual Validation and Verification Manual (VVM) of CDM projects.

The first periodic JI Track 1 verification has been performed as one integrated activity. It consisted of a desk review of the project documents including PDD, monitoring plan, validation report, draft monitoring report and further documentations.

The project has been finally and positively determined by TÜV SÜD (Report No. 1042259, rev. 1 from 07/11/2008) and is already approved, registered and listed as JI Track 1 project in the Ukraine by the UNFCCC (Reg. No. UA1000031) since March 23, 2009.

The verification team consists of the following personnel:

Thomas Kleiser	TÜV SÜD, Munich	Project Manager, Audit Team Leader
Olena Maslova	TÜV SÜD, Munich	GHG Auditor, Project Manager
Andrey Atyakshev	TÜV SÜD Moscow	GHG Auditor and Country expert
Dr. Albert Geiger	TÜV SÜD, Munich	Expert (geologist) and GHG Auditor

1.1 Objective

The objective of the first periodic JI Track 1 verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; further more the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is free of material misstatements; and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records. During the periodic verification it also has to be assessed whether Forward Action Requests remaining from former verifications already have been solved or at least that there is a significant progress in solving these issues finally and that no major risks remain for the successful verification.

The verification shall consider both quantitative and qualitative information on emission reductions.

Quantitative data comprises the monitoring reports submitted to the verifier by the project entity. Qualitative data comprises information on internal management controls, calculation procedures, and procedures for transfer, frequency of emissions reports, review and internal audit of calculations/data transfers.

The verification is based on criteria set by UNFCCC, the Kyoto Protocol and JI Track 1 and Track 2 as well as CDM modalities and procedures. Also national regulations for JI Track 1 projects as well as specific national regulations for the coal mine sector have been considered.

1.2 Scope

Verification scope is defined as an independent and objective review and ex post determination by the Designated Operational Entity of the monitored reductions in GHG emissions. The verification is based on the submitted monitoring report and the validated project design documents including its monitoring plan. The monitoring report and associated documents are reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The verification is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

The audit team has been provided with a first Monitoring Report and underlying data records in April, 2009 (version 1.3), covering the period for generating emissions reductions from January1st, 2008 to December 31th, 2008. This document serves as the basis for the assessment presented herewith.

A final revised Monitoring report (Version 2.2, dated January the 12th, 2010) was submitted at the end of the verification process and serves as basis for the final conclusion in this report.

Studying the existing documentation belonging to this project, it was obvious that the competence and capability of the audit team performing the verification has to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Environmental and Social Impact Assessment
- Knowledge of recent decisions by JI supervisory committee - http://ji.unfccc.int for JI projects
- Quality assurance
- Technical aspects of coal mine methane capture and utilization
- Monitoring technologies and concepts
- Political, economical and technical conditions in host country

According to these requirements TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV certification body "climate and energy":

Thomas Kleiser is head of the certification body "climate and energy" at TÜV Industrie Service GmbH and has a background in physics and meteorology. In this position he is responsible for validation, verification and certifications processes for GHG mitigation projects as well as trainings

for internal auditors. He has already conducted more than 110 validations and verifications of CDM and JI projects as well as projects on the voluntary markets.

Olena Maslova is an auditor in the "Carbon Management Service" department of TÜV SÜD Industrie Service GmbH in Munich, Germany. She is chemical engineer and host country expert for projects in Ukraine and Commonwealth of Independent States. Olena Maslova specializes in the assessment of CDM / JI projects in the sector of chemical industries and waste handling and disposal. In this project she functioned as local expert and project manager.

Andrey Atyakshev is responsible for the carbon business of TÜV SÜD in Russia and has a background in metal forming and mechanical engineering. He has received extensive training as GHG auditor and on all aspects of flexible mechanisms of the Kyoto protocol. Also he is appointed ISO 9001 auditor. For this specific project he was responsible for the communication with the Ukrainian project participants and assistance in reviewing of submitted documents.

Dr. Albert Geiger is an appointed GHG auditor**.** He has already carried out several validations and verifications of CDM and JI projects. From his professional education he is geologist and he works in this field at TÜV SÜD in various projects since more than 8 years.

The audit team covers the above mentioned requirements as follows:

- Knowledge of Kyoto Protocol and the Marrakech Accords (all)
- Environmental and Social Impact Assessment (all)
- Knowledge of recent decisions by JI supervisory committee (all)
- Quality assurance (KLEISER)
- Technical aspects of coal mine methane capture and utilization (KLEISER, Dr. GEIGER)
- Monitoring technologies and concepts (all)
- Political, economical and technical conditions in host country (MASLOVA)

Responsibility for the internal quality control of the project was Dr. Sven Kolmetz of the certification body "climate and energy" within TÜV SÜD.

1.3 GHG Project Description

The purpose of this project is the avoidance of methane emissions into the atmosphere at the coal mine Sukhodilska-Skhidna or simply the mine. Coal Mine Methane (CMM) is used to replace heat currently produced by coalfired boilers.

At the moment one gas boiler is installed and in operation with the metering system. The commissioning of the second CMM fuelled boiler is not completed and the heat meters and cross-checking measuring equipment are not in operation yet.

The comissioning of the second boiler was planned for March 2008. The delayed implementation in regard to the envisaged time shedule for project implementation as indicated in the approved and registered PDD does not affect the additionality of the project due to a decrease in emission reductions.

On-site audits have been carried out on April 23rd, 2009. Participants at the audits on the behalf of the project participants were:

Audit Participants on behalf of the Coal Mine Sukhodilska-Skhidna:

- Mr. Steblin V. G., Chief Engineer
- Mr. Rykunov Y. A., Section Foreman of Degasification
- Mr. Naumenko D. V., System Administrator
- Mr. Tapilin M. A., Heating Engineer
- Mr. Markin V. I., Head of Boiler House

Audit participants on behalf of Global Carbon Ukraine Ltd.:

- Mr. Oleg Bulany, Senior Consultant
- Mr. Anatoliy Sarioglo, Consultant

Audit participant on behalf of the ING bank:

- Mr. Peter van Eijndhoven, Vice President, Natural Resources

Audit participant on behalf of Metinvest Holding:

- Mr. Viktor Skarshevsky, Senior Manager

Audit participants on behalf of TÜV SÜD:

- Dr. Albert Geiger – GHG Auditor, Geologist and Technical Expert for Monitoring Concepts in Methane related methodologies
- Mr. Andrey Atyakshev – GHG Auditor Trainee and Local Expert

2 METHODOLOGY

In order to ensure transparency a verification checklist (VC) has been prepared based on the received documents (see Annex 1) according to the Periodic Verification Report Template Version 3.0, December 2003, which is part of the Validation and Verification Manual (VVM) published by International Emission Trading Association (IETA) in 2003.

These checklists serve the following purposes:

- it organizes details of the audit procedure and clarifies the requirements the project is expected to meet; and
- it documents the result of the verification.

During the verification a special focus was given to:

- the correct implementation of the project (installations, monitoring equipment and procedures, quality assurance procedures)
- the correctness of assumptions with impacts on the monitoring and verification process (e.g. baseline assumptions)
- sustainable development and environmental performance parameters
- training programs
- allocation of responsibilities
- the day-to-day operation of the system

After the document review the audit team conducted

- an on-site inspection at the coal mine gas assessing the CMM capture and utilization system
- interviews with the members of the owner and operator and the project developer responsible for writing the monitoring report

The findings are the essential part of this verification report, which is based on the verification protocol of the Periodic Verification Report Template Version 3.0, December 2003, which is part of the Validation and Verification Manual (VVM) published by International Emission Trading Association (IETA) in 2003.

The structure of the tables in the periodic verification protocol is shown in the following:

Periodic Verification Checklist Table 1: Data Management System/Controls		
Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table.	A score is assigned as follows: **Full** all best-practice expectations are implemented. **Partial** a proportion of the best practice expectations is implemented **Limited** this should be given if little or none of the system component is in place.	Description of circumstances and further commendation to the conclusion. This is either acceptable based on evidence provided (**OK**)**,** or a **Clarification Request (CR)** in case the information given in the monitoring report ids deemed insufficient but correct or a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Verification report. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications

Periodic Verification Checklist Table 2: GHG calculation procedures and management control testing		
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Identification of potential reporting risks based on an assessment of the emission estimation procedures.	Identification of the key controls for each area with potential reporting risks. Assessment of adequacy of the key controls and eventually test that the key controls are actually in operation.	Identification of areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks
Identification of key source data. Focus on those risks that impact the accuracy, com-	Internal controls include, Understanding of responsibilities and roles, Reporting, reviewing and formal	Areas where data accuracy, completeness and consistency could be improved are

Periodic Verification Checklist Table 2: GHG calculation procedures and management control testing		
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
pleteness and consistency of the reported data.	management approval of data; Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc.	highlighted.

Periodic Verification Checklist Table 3: Detailed audit testing of residual risk areas and random testing		
Areas of residual risks	**Additional verification testing performed**	**Conclusions and Areas Requiring Improvement (including *FARs*)**
List of residual areas of risks of Periodic Verification Checklist Table 2 where detailed audit testing is necessary. *In addition, other material areas may be selected for detailed audit testing.*	*The additional verification testing performed is described. Testing may include:* ▪ *Sample cross checking of manual transfers of data* ▪ *Recalculation* ▪ *Spreadsheet 'walk throughs' to check links and equations* ▪ *Inspection of calibration and maintenance records for key equipment* ▪ *Check sampling analysis results* *Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.*	*Having investigated the residual risks, the conclusions are noted here. Errors and uncertainties are highlighted.*

Five CARs were encountered and could be solved during the verification process.

CRs appear whenever

- Given information in the monitoring report was deemed to be insufficient.

No CRs have been identified and solved during this verification process.

Furthermore FARs (Forward Action Requests) for a better understanding can be issued, whenever

- the current status requires a special focus on this item for the next consecutive verification, or
- an adjustment of the MVP is recommended
- more detailed information appears a beneficial to the project
- QM procedures are available but should be collected in one central document (QM Manual).

Seven Fars have been issued which have to be resolved until the next periodic verfication.

Duration of the verification

Preparations: March/April 2009

On-site verification: 23rd of April 2009

Monitoring Period:

January 01, 2008 to December, 31, 2008

2.1 Review of Documentation and Site Visits

The verification was performed as a desk review of the project documents including monitoring plan, last verification report, monitoring report and further documentations.

The site visit included an on-site inspection at the coal mine with focus on the methane capture and utilization system, further a focus on the QM system (mainly data processing, work instructions etc.), interviews with the management as well as operators and workers and with a representative of the project developer, Dutch company Global Carbon BV.

2.2 Resolution of Corrective and Forward Action Requests

The objective of this phase of the verification was to resolve the requests for clarification, the corrective action requests and any other outstanding issues which needed to be clarified for TÜV

SÜD`s positive conclusion on the GHG emission reduction calculation. To guarantee the transparency of the verification process, the requests raised and responses that have been given are summarized in chapter 3 below and documented in more detail in the verification protocol in annex 1 and 2.

3 PERIODIC VERIFICATION FINDINGS

In the following sections the findings of the verification are stated. The verification findings for each verification subject are presented as follows:

The findings from the desk review of the final monitoring report and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Verification Protocol in annex 1.

1) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification Request or Corrective or Forward Action Request, respectively, have been issued. The Clarification Requests as well as Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in annex 1. The verification of the project resulted in five Corrective Action Requests.
2) In the context of Forward Action Requests, risks have been identified, which may endanger the delivery of high quality CERs in the future, i.e. by deviations from standard procedures as defined by the MP. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions. Forward Action Requests are understood as recommendation for future project monitoring; they are stated, where applicable, in the following sections and are further documented in the Verification Protocol in annex 1. Seven FARs have been identified. No CRs have been raised.
3) The final conclusions for verification subject are presented.

The verification findings relate to the project implementation as documented and described in the final monitoring report.

3.1 Remaining issues, CARs, FARs from the last verification

3.1.1 Discussion

One task of this first periodic JI Track 1 verification is to check the remaining issues from the previous verification or issues which are clearly defined for assessment in the PDD.

3.1.2 Findings

There have been seven Forward Action Requests from the last verification (pre-JI verification period). These requests are summerised in the following table:

OBJECTIVE	COMMENTS	Concl.
Documentation	**Forward Action Request No. 1:** The cross-checking procedures have to be planned and implemented and documented until the next (2nd JI Track 2) verfication.	FAR#1
Documentation	**Forward Action Request No. 2:** Because the project activities are not clearly described on-site a Monitoring Manual should be developed in which all necessary information for the monitoring is collected (reporting procedures, data flow, work instructions, internal reviews, meter description, calibration requirements and frequencies, necessity for trainings, training documentation, licenses etc.) The manual should be designed as a living document incorporating the results for the different verifications.	FAR#2
Documentation	**Forward Action Request 3:** The staff has to be trained annually in the project specific issues. The training plans and procedures should be described in the recommended Monitoring Manual (see FAR 2). Trainings should be documented and countersigned by the participants.	FAR#3
Documentation	**Forward Action Request 4:** Trouble shooting procedures have to be worked out and included in the future monitoring manual.	FAR#4
Documentation	**Forward Action Request No. 5:** Working instructions for data collection should be prepared and distributed to the locally responsible persons. These work instructions should also be part of the future monitoring manual.	FAR#5
Documentation	**Forward Action Request No. 6:** Please describe and implement the planned cross-	FAR#6

OBJECTIVE	COMMENTS	Concl.
	checking procedures till the third verification.	
Documentation	**Forward Action Request No. 7:** The commissioning report of the vacuum pump station has to be delivered after the final testing of the protection system.	FAR#7

3.1.3 Conclusion

The above mentioned 7 FARs have not been solved yet, because the first JI verfication has been carried out together with the verfication of the pre-JI period. The identified 7 FARs have to be solved till the second JI verification (overall 3rd verification).

3.2 Completeness of Monitoring

3.2.1 Discussion

A meter system (pressure, temperature, gas analyser, orifice flow meter) to measure the methane consumption of the boiler is installed according to the monitoring plan. However, no heat meter has been installed yet because no heat is being supplied to external consumers at the moment.

The heat consumption is calculated using the low calorific value of methane, the efficiency of the boiler and the consumpted amount of methane. This is a deviation to the registered PDD. TÜV SÜD evaluated the new method and confirmes its equivalence to heat measurements as described in the registered PDD.

The data were standardised using the highest temperature (58°C) and lowest pressure (0.005 Mpa) of this period. The conservativeness of this approach has been clearly demonstrated by error analysis (Ref. 2-23). The reduction of this approach is 5.8% which is much more conservative than the maximum error of 2.6 % of the average values.

3.2.2 Findings

none

3.2.3 Conclusion

The monitoring report is transparent and complete. The status of the project is clearly described in chapter A.3. All parameters and formulae mentioned in the PDD are described in detail (chapter B and D). The relationship between meters and parameters is clearly demonstrated. All meters are unambiguously identified by their serial numbers and ID numbers. The location of the meters is shown on overviews or is described. The calibration specifications are clearly shown.

Two deviations from the Monitoring Plan of the PDD are clearly stated in the MR: Calculation of HEATcons,y instead of measurement and the use of the highest observed temperature and the lowest observed pressure in the standardisation procedure. It has been clearly shown by error analysis that both deviations are equivalent or even more conservative than the procedures described in the registered PDD.

Hence, TÜV SÜD confirms that the monitoring as described in the monitoring report complies fully with the JI Track 1 requirements.

3.3 Accuracy of Emission Reduction Calculations

3.3.1 Discussion

For metering only calibrated meters have been used according to our check of the calibration documents (see 2.4 till 2-6 of the document list). Inspection of calibration and maintenance records for key equipment was performed for all relevant meters. All calibrations fulfil the calibration requirements of the Ukrainian national regulations and the finally approved and registered PDD.

The raw data have been checked randomly using written meter values of the logbooks. The values used in the calculation file (excel file) have been checked against the raw data. No errors have been detected.

All default values used in the calculations have been checked against the finally approved and registered PDD. The values fully comply with the PDD default values.

All calculations of the emission reductions have been done according to the formulae of the registered PDD using Microsoft excel. The correctness of the calculations has been checked by TÜV SÜD during the on-site visit in doing exemplary recalculations.

The data were standardised using the highest temperature (58°C) and lowest pressure (0.005 Mpa) of this period. The conservativeness of this approach has been clearly demonstrated by error analysis (Ref. 2-23). The reduction of this approach is 5.8% which is much more conservative than the maximum error of 2.6 % of the average values.

3.3.2 Findings

OBJECTIVE	COMMENTS	Concl.
Calculation	**Corrective Action Request No. 1:** Please give documented evidence that the set Q_{CH4}- value of 35.82 GJ/1000m^3 is all right.	The document has been provided. ☑
Calculation	**Corrective Action Request No. 2:** In the calculations of ER the efficiency of new boiler is 93% but according to documentation it is 91%. Please clarify and give evidence.	After on-site visit the recalculations have been made using the real value of the boiler efficiency (91%). The revised calculations of the emission reductions have been provided. The Issue is considered as solved. ☑
Calculation	**Corrective Action Request No. 3:** The formula (2) on the page 11 of monitoring report is not complete. Please revise.	The formula has been revised. The Issue is considered as solved. ☑

Calculation	**Corrective Action Request No. 4:** In the MR only the sums over the whole crediting period are presented. These sums were not verifiable on-site because only hourly raw data were available. The calculations should be done on the basis of monthly data. Please revise the calculations and present the monthly raw data for evidence.	The data have been recalculated on monthly data basis. The initial hourly based data were transformed to monthly format and presented herewith. The calculations are based on computer system stored data for 2008 year and on the temperature data from manual filled logbooks of 2008. The data from the log books do not represent continuous measurements, therefore a conservative approach was taken using the maximum temperature and the minimum pressure recorded. Issue is considered as solved. ☑

3.3.3 Conclusion

The settled Cars have been answered sufficiently

TÜV SÜD confirms that:

- **the applied raw data are accurate**
- **the emission reduction calculations are transparent and correct**
- **the Monitoring Report fully complies with the approved PDD concerning the accuracy of the calculations.**

3.4. Quality of Evidence to Determine Emission Reductions

3.4.1 Discussion

The calculation of emission reductions was based on internal data. The origin of these data was explicitly checked.

The entering and processing of the data and the used excel sheets were checked, where predefined algorithms compute the annual value of the emission reductions. All equations and algorithms used in the different workbook sheets follow the methodology and were checked successfully.

The manual transfer of data was checked on a random basis and spot checks. No mistakes have been detected.

The observations of the auditing team left no doubt that the monitoring process, defined in the Monitoring Plan and the Monitoring Report, has been followed and is being followed completely.

3.4.2 Findings

None.

3.4.3 Conclusion

TÜV SÜD confirms that the project complies fully with the JI requirements in respect to the quality of evidence.

3.5 Management System and Quality Assurance

3.5.1 Discussion

Due to the straightforward approach for calculating GHG emission reductions the existing management system is appropriate. However, the monitoring procedures should be specified in a Montioring Manual (see FARs above).

3.5.2 Findings

The findings are summerised in the following table:

OBJECTIVE	COMMENTS	Concl.
Quality Assurance	**Corrective Action Request No. 5:** Please submit the calibration protocols of the flow meter for the period from 01/01/2008 till 31/12/2008 and the gas analyzer for the period from 26/07/2008 till 31/12/2008.	The calibration protocols have been submitted. ☑

3.5.3 Conclusion

The CAR has been solved. The FARs have to be solved till the next verfication.

Hence, TÜV SÜD confirms that the project complies fully with the approved PDD concerning the Management System and the QAS.

4. PROJECT SCORECARD

The conclusions on this scorecard are based on the latest version of the monitoring report.

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Emission Reductions	
Completeness	Source coverage/ boundary definition	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently.
Accuracy	Physical Measurement and Analysis	✓	✓	✓	State-of-the-art technology is applied in an appropriate manner. Appropriate back-up solutions are provided.
	Data calculations	✓	✓	✓	Emission reductions are calculated correctly.
	Data management & reporting	✓	✓	✓	Data management and reporting were found to be satisfying. Potential for improvement is indicated by 7 FARs.
Consistency	Changes in the project	✓	✓	✓	Results are consistent to underlying raw data.

5 VERIFICATION STATEMENT

The certification body "Climate and Energy" of TÜV SÜD Industrie Service GmbH has been ordered by ING Bank N.V., Netherlands, to carry out the first periodic JI Track 1 verification of the JI Track 1 project "Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna".

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The implementation of the project is delayed as described in the project implementation time shedule in the registered JI Track 1 project. TÜV SÜD confirms that the delayed implementation does not affect the additionality of the project due to a decrease in emission reductions.

There are two deviations from the finally approved Monitoring Plan of the registered PDD: Calculation of HEATcons,y instead of measurement and the use of the highest observed temperature and the lowest observed pressure in the standardisation procedure. TÜV SÜD confirms that both deviations are equivalent or even more conservative than the procedures described in the registered PDD.

The verifier confirms that the installed equipment being essential for generating emission reduction and for metering the data defined in the monitoring plan runs reliably and is calibrated appropriately. The monitoring system is in place and the project generates GHG emission reductions according to the approved methodology.

The verifier can confirm that the GHG emission reduction is correct and calculated conservatively for the whole monitoring period.

Our opinion relates to the project's GHG emissions reductions reported and related to the valid project baseline and monitoring, and its associated documents.

Based on the information we have seen and evaluated, TÜV SÜD confirms the following statement:

Reporting period: 1st JI period: January 01 to December 31, 2008.

Verified emission in the above reporting period:

Baseline Emissions:	**34,742 t CO2**
Project Emissions :	**3,690 t CO2**
Emission Reductions:	**31,052 t CO2**

The verification team also determined some areas of risks for the project in the context of the management system. Those issues indicated as "Forward Action Request" and should be submitted as indispensable information to the verification team of the next periodic verification.

Munich, January 15th, 2010

Thomas Kleiser
Assessment Team Leader

Munich, January 15th, 2010

Rachel Zhang
Deputy Head of certification body Climate and Energy"

Table 1: Data Management System/Controls

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:

- Full - all best-practice expectations are implemented.
- Partial - a proportion of the best practice expectations is implemented
- Limited - this should be given if little or none of the system component is in place.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
1. Defined organisational structure, responsibilities and competencies		
1.1. Position and roles *Position and role of each person in the GHG data management process is clearly defined and implemented, from raw data generation to submission of the final data. Accountability of senior management must also be demonstrated.*	Partial	Position and role of each person in the GHG data management process are clearly defined in the monitoring report and are implemented on-site. The roles and positions as well as data processing should be included in a Monitoring Manual to ensure a transparent monitoring system and to avoid mistakes due to possible illegibility in the roles and responsibilities. **Please see also Initial Verification Checklist (IVC).**
1.2. Responsibilities *Specific monitoring and reporting tasks and responsibilities are included in job descriptions or special instructions for employees.*	Partial	Responsibilities are defined in the Monitoring Plan and in the Monitoring Report. The responsibilities should be determined in the job descriptions or special instructions for employees.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
		Forward Action Request No. 1: Please elaborate and implement until the third periodic verification the job descriptions or special instructions for employees. These instructions should be a part of Monitoring Manual.
1.3. *Competencies needed* *Competencies needed for each aspect of the GHG determination process are analysed. Personnel competencies are assessed and training programme implemented as required.*	Partial	The competencies needed for each aspect of the GHG determination process have been checked on-site. Experiences in implementation of monitoring concepts as well as in development of monitoring reports has been demonstrated by the interviewed persons. All staff involved in the monitoring activity is annually trained concerning safety requirements and operation of the boiler. The protocols of the annually trainings were submitted to the audit team. The trainings should also include the specific requirements of the greenhouse gas emission reduction project, functions and purpose of the project as well as knowledge how the correctness of values and processes can be cross-check on-site, contingencies should be communicated to all participating persons, too. All required details on qualifications and trainings should be described in the future Monitoring Manual. Furthermore, it has to be demonstrated by training plans (individualized per person and signed by the relevant trainee) how and when the required qualification was achieved. **Please see Protocol to the IVC.**
2. Conformance with monitoring plan		
2.1. Reporting procedures	Partial	The reporting procedures reflect in general the monitoring plan content. Deviations have been detected and have been discussed

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
Reporting procedures should reflect the monitoring plan content. Where deviations from the monitoring plan occur, the impact of this on the data is estimated and the reasons justified.		during initial verification. **Please see the protocol to the IVC.**
2.2. Necessary Changes *Necessary changes to the monitoring plan are identified and changes are integrated in local procedures as necessary.*	Full	No necessary changes have been detected.
3. Application of GHG determination methods		
3.1. Methods used *There are documented description of the methods used to determine GHG emissions and justification for the chosen methods. If applicable, procedures for capturing emissions from non-routine or exceptional events are in place and implemented.*	Partial	The method to determine GHG emissions is fully documented. But the procedures for capturing emissions from non-routine or exceptional events are not available. **Forward Action Request No. 2:** Please elaborate and implement until the third periodic verification the procedures for capturing emissions from non-routine or exceptional events. These procedures should be part of the Monitoring Manual. **Please see also the protocol to the IVC.**
3.2. Information/process flow *An information/process flow diagram, describing the entire process from raw data to reported totals is developed.*	Partial	Details of the information flow exist and work, but no overall flow diagram is available. The information/process flow should be included in the Monitoring Manual. **Please see the protocol to the IVC.**
3.3. Data transfer *Where data is transferred between or within sys-*	Partial	The raw data (volume of fuel gas sent to the boiler and concentration of methane in the fuel gas) transmits automatically to the computer of boiler house where they summarised in the hourly and

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
tems/spreadsheets, the method of transfer (automatic/manual) is highlighted - automatic links/updates are implemented where possible. All assumptions and the references to original data sources are documented.		daily reports. The daily reports are printed out, collected and stored for each month in separate folder. The monthly reports are prepared manually by means of simple calculation of daily data and then the result put in the excel sheets. In addition the raw data are recorded by the operator manually every hour. These manual records collected in the boiler-house's registry book. In the MR only the sums over the whole crediting period are presented. These sums were not verifiable on-site because only hourly raw data were available. **Corrective Action Request No. 4:** The calculations should be done on the basis of monthly data. Please revise the calculations and present the monthly raw data for evidence. **Forward Action Request No. 3:** This information should be included in the work instructions and distributed to the locally responsible until the third periodic verification. These work instructions should also be part of the future monitoring manual. **Please see also the protocol to the IVC**.
3.4. Data trails *Requirements for documented data trails are defined and implemented and all documentation are physically avail-*	Full	All documents with the primary data are available and all primary data which were retrieved on a random basis could be confirmed.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
able.		
4. Identification and maintenance of key process parameters		
4.1. Identification of key parameters *The key physical process parameters that are critical for the determination of GHG emissions (e.g. meters, sampling methods) are identified.*	Full	Yes, all key parameters are identified.
4.2. Calibration/maintenance *Appropriate calibration/maintenance requirements are determined.*	Partial	Yes, all appropriate calibration/maintenance requirements are determined. In accordance with Ukrainian low all measuring equipment which used in the project activity has to be calibrated periodically by accredited third party. However during on site visit not all calibration protocols were available. **Corrective Action Request No. 5:** Please submit the calibration protocols of the flow meter for the period from 01/01/2008 till 31/12/2008 and the gas analyzer for the period from 26/07/2008 till 31/12/2008.
5. GHG Calculations		
5.1. Use of estimates and default data *Where estimates or default data are used, these are validated and periodically evaluated to ensure their ongoing appropriateness and accuracy, particularly following changes to circumstances, equipment etc. The validation and periodic evaluation of this is documented.*	Partial	Default values (either IPCC or data locally acquired as boiler efficiency) already have been described in the PDD and have been confirmed in the determination report. However deviation in boiler efficiency was identified by audit team in the calculations of the ER. In deviation to the PDD $HEAT_{cons,y}$ is not explicitly measured by a heat meter but is calculated by the formula $HEAT_{cons,y} = V_{CH4} \times C_{Ch4}$

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
		x Q_{CH4} x η. (V_{CH4} – Volume of CMM burned in the boiler in the year y, C_{Ch4} – Concentration of methane in the fuel gas (%);Q_{CH4} – low caloric value of methane (GJ/1000m^3); η - efficiency of the boiler (%)). Both approaches are technically equivalent. Hence, TÜV SÜD confirms the validity of the new approach. However, the set value of Q_{CH4} could not be explained in the meeting. **Corrective Action Request No. 1:** Please give documented evidence that the set Q_{CH4}- value of 35.82 GJ/1000m^3 is all right. **Corrective Action Request No. 2:** In the calculations of ER the efficiency of new boiler is 93% but according to documentation it is 91%. Please clarify and give evidence. **Corrective Action Request No. 3:** The formula (2) on the page 11 of monitoring report is not complete. Please revise.
5.2. Guidance on checks and reviews *Guidance is provided on when, where and how checks and reviews are to be carried out, and what evidence*	Partial	Currently there are no explicit internal control procedures implemented by the mine. **Forward Action Request No. 4:**

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
needs to be documented. This includes spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.		Please elaborate and implement until the third periodic verification the internal control procedures for data verification, data validation and the handling of unexpected problems as well as internal reviews. These procedures should be part of the Monitoring Manual. **Please see protocol to the IVC.**
5.3. Internal verification *Internal verifications include the GHG data management systems, to ensure consistent application of calculation methods.*	Partial	Currently no fixed procedures for internal verification of data exist. Internal verification appears and is possible but is not organised and ruled by work instructions. **Forward Action Request No. 5:** A procedure for periodic internal verification of data and calculated GHG reductions as well as cross-check procedures should be included in the Monitoring Manual. **Please see the protocol to the IVC.**
5.4. Internal validation *Data reported from internal departments should be validated visibly (by signature or electronically) by an employee who is able to assess the accuracy and completeness of the data. Supporting information on the data limitations, problems should also be included in the data trail.*	Partial	**Please see the protocol to the IVC.**
5.5. Data protection measures *Data protection measures for databases/spreadsheets should be in place (access restrictions and editor rights).*	Partial	Data protection and assurance measures are already implemented to some part. But the data protection measures currently are only part of "business-as-usual" procedures and available on a local workplace level but not documented in a central document. Thus also the data protection measures have to be included, documented and responsibilities have to be defined in the Monitoring

Expectations for GHG data management system/controls	**Score**	**Verifiers Comments (including *Forward Action Requests*)**
		Manual. **Forward Action Request No. 6:** The description of the IT system used for GHG monitoring as well as data protection procedures and assurance measures have to be included in the Monitoring Manual until the third periodic verification audit. **Please see also the protocol to the IVC.**
5.6. IT systems *IT systems used for GHG monitoring and reporting should be tested and documented.*	Partial	Please see FAR6

Table 2: GHG calculation procedures and management control testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Based on an assessment of the emission calculation procedures potential reporting risks are • technical failures in metering devices not being realized by the operation team • human failures in data transfer and measurements (data from daily reports for example) • human failures in reporting exceptional events • calculation errors Risks in the IT system are considered to be low. The used Excel file is entirely simple. The risk in failures of the measurement system is also considered to be low in case of periodic calibration and maintenance of the equipment. The risk for human failures in writing down the raw data (volume of fuel gas sent to the boiler and concentration of methane in the fuel gas) at the boiler house is also considered to be low and can be reduced by internal cross-checks and plausibility checks.	Regarding the potential reporting risks identified in the left column the following mitigation measures have been observed during the document review and the on site mission: The key data are defined in section D of the IVC. They have a rather simple structure and allow easy plausibility checks. These plausibility checks are currently only partially carried out case by case but written procedures to carry out such cross-checks (plausibility checks) and how cross-checks are currently missing. These should be included in the new Monitoring Manual. A logbook where all unexpected events are written down was not available during the on-site audit. Nevertheless the observations of the audit team left no doubt that the monitoring process in general as defined in the PDD and described in the monitoring report has been and is being followed. But additional procedures and written documentation should be implemented and	The human risk of mistakes in measuring and writing down values cannot be eliminated totally. But by using the potential for cross-checks as well as carrying out the necessary trainings such mistakes can be reduced significantly in the future. Besides this the reporting risks are very low as the monitoring of the raw data is already automated.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Exceptional events should be included in the boiler-house's registry book.	added to the new Monitoring Manual.	

Table 3: Detailed audit testing of residual risk areas and random testing

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
Human mistakes in measurements and data processing	During the on-site visit the persons involved in the data acquisition process have been interviewed and asked concerning their role and competencies, furthermore they had to describe the procedures for which they are responsible.	There is no indication that mistakes could appear willingly. All persons are well-informed about their role and have the necessary competencies. However implementation of the internal control procedures, installation of the cross-checking equipment as well as carrying out the necessary trainings such mistakes can be prevented in the future. **See FARs**
Additional random testing	• Sample cross checking of manual transfers of data: All data which were used in the .xl -sheet of the calculation file were explicitly checked. On a random basis data were checked at their primary source. • Re-calculation Recalculation of the workbook files was performed. • Spreadsheet "walk throughs" to check links and equations All equations and algorithms used in the different workbook sheets were	In the MR only the sums over the whole crediting period are presented. These sums were not verifiable on-site because only hourly raw data were available. Therefore the calculations should be done on the basis of monthly data. Also during on site visit not all calibration protocols were available.

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
	checked. • Inspection of calibration and maintenance records for key equipment The seals and the documents for the key equipment were inspected.	**See FARs**

Table 4: Compilation of open issues

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
Corrective Action Request No. 1: Please give documented evidence that the set Q_{CH4}-value of 35.82 GJ/1000m^3 is all right.	The value of Q_{CH4} has been taken from: V.A.Grigoriev, V.M.Zorin, Theoretical bases of heating engineering. The technical experiment. Reference book. Volume#2, Moscow, ENER-GOATOMIZDAT, 1988. Page#367, table#7.7	The document has been provided and is deemed appropriate and applicable for this project. ☑
Corrective Action Request No. 2: In the calculations of ER the efficiency of new boiler is 93% but according to documentation it is 91%. Please clarify and give evidence.	The initial calculations were made on the base that the boiler efficiency given by the mine was equal to 93%. After on-site visit the recalculations have been made using the real value of the boiler efficiency (91%). The revised calculations of the emission reductions have been provided.	The recalculation has been done with a boiler efficiency of 91% which leads to a more conservative value in the ERUs. Hence, this issue is considered as solved. ☑
Corrective Action Request No. 3: The formula (2) on the page 11 of monitoring report is not complete. Please revise.	The formula was revised.	Issue is considered as solved. ☑
Corrective Action Request No. 4: In the MR only the sums over the whole crediting period are presented. These sums were not verifiable on-site	The data have been recalculated on monthly data basis. The initial hourly based data were transformed	Audit team cross checked the delivered data against raw data (October 2008). The raw data did not confirm your submitted data. Hence, please

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
because only hourly raw data were available. The calculations should be done on the basis of monthly data. Please revise the calculations and present the monthly raw data for evidence.	to monthly format and presented herewith. **Second response:** The revised data for whole period (from 01.01.2008 up to 31.12.2008) of the project activity were presented. (see the Excel calculation sheet). It was found that there is no evidence of normalizing (i.e. transformation the measured values to the normal conditions: T=0°C and P=101kPa) when the flow rate was measured. Moreover, the temperature data of CMM before the boiler has not been measured digitally or stored in computer system. So we decided to base our recalculation on the data from the computer system stored data for 2008 year and on the temperature data from manual filled logbooks for 2008. **Third response:** The data from the log books do not represent continuous measurements, therefore we decided to apply a conservative approach and use the maximum temperature recorded, and the minimum pressure recorded.	check all your data tables and send us the revised sheets with the true values (see attached document). **Second response:** An error analysis of all manually determined parameters (beside of temperature) has to be done by PPs because of reading errors, transfer errors etc. These errors have also to be considered in the calculations. Also the data from the log books do not represent continuous measurements. Hence, it has to be clearly demonstrated by PPs that the given data are average data and no maximum data. Otherwise the data have to be reduced by an error factor which has to be derived by PPs. **Third response:** Please prove the statement that "the approach to use the maximum temperature and the minimum pressure is more conservative" and the opinion that "reading and transfer errors are negligible" in the case of **all parame-**

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
	Also in our opinion the errors (reading errors, transfer etc.) are negligible, and are more than taken into consideration by the conservative approach that has been applied. **Fourth response:** The analysis has been provided to audit team.	**ters** by means of analysis or other transparent way. The proof must be evidenced by undeniable facts. **Fourth response:** As result of these corrections, the emission reductions are now calculated more conservatively. Hence, this issue is considered as solved. ☑
Corrective Action Request No. 5: Please submit the calibration protocols of the flow meter for the period from 01/01/2008 till 31/12/2008 and the gas analyzer for the period from 26/07/2008 till 31/12/2008.	The calibration protocols were submitted to verification team.	The calibration protocols of the flow meters and the gas analysers have been submitted. ☑
Forward Action Request No. 1: Please elaborate and implement until the third periodic verification the job descriptions or special instructions for employees. These instructions should be a part of Monitoring Manual.	In development	
Forward Action Request No. 2: Please elaborate and implement until the third periodic	In development	

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
verification the procedures for capturing emissions from non-routine or exceptional events. These procedures should be part of the Monitoring Manual. **Please see also the protocol to the IVC.**		
Forward Action Request No. 3: This information should be included in the work instructions and distributed to the locally responsible until the third periodic verification. These work instructions should also be part of the future monitoring manual. **Please see also the protocol to the IVC**.	In development	
Forward Action Request No. 4: Please elaborate and implement until the third periodic verification the internal control procedures for data verification, data validation and the handling of unexpected problems as well as internal reviews. These procedures should be part of the Monitoring Manual. **Please see protocol to the IVC.**	In development	
Forward Action Request No. 5: A procedure for periodic internal verification of data and calculated GHG reductions as well as cross-check procedures should be included in the Monitoring Manual. **Please see the protocol to the IVC.**	In development	
Forward Action Request No. 6: The description of the IT system used for GHG monitor-	In development	

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
ing as well as data protection procedures and assurance measures have to be included in the Monitoring Manual until the third periodic verification audit. **Please see also the protocol to the IVC.**		

Industrie Service

Category 1 Documents:

Documents provided by the Client that relate directly to the GHG components of the project. These have been used as direct sources of evidence for the initial verification conclusions.

1-1	Final PDD "Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna", version 4.9 dated October 21st, 2008, designed by Global Carbon B.V.
1-2	Final Determination Report for future JI project: "Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna", in Sukhodilsk, Krasnodon District, Ukraine, Determination Report No. 1042259, rev. No. 1, November 7th, 2008
1-3	Monitoring Report for the Second Verification of project "Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna", April 6th, 2009, Version No. 1.3, designed by Global Carbon B.V.
1-4	List of participants during on-site audit at the Coal Mine Sukhodilska-Skhidna on April 23rd, 2009.
1-5	xls sheets for the calculation of the emission reductions in the monitoring period from 01/01/2008 till 31/12/2008
1-6	Daily records of the boiler's characteristics from 01/10-31/10/2008. The boiler No. 4 type KE-10-14C.
1-7	Operating instruction of the boiler No. 4 type KE-10-14C. Issued in Krasnodon 2007.
1-8	Extract from the annual training protocol No. 623 dated 11/10/2008.
1-9	Information flow diagram
1-10	Monthly reports of the volume of fuel gas sent to the boiler and concentration of methane in the fuel gas. Reporting period from April 2006 until December 2008.
1-11	Revised Monitoring Report for the Second Verification of project "Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna", January 12, 2010, Version No. 2.2, designed by Global Carbon B.V.
1-12	Revised xls sheets for the calculation of the emission reductions in the monitoring period 2008, November 12th, 2009, version 1.8.
1-13	The log books records for 2008.
1-14	The registered project can be fond on the following UNFCCC website: http://ji.unfccc.int/JIITLProject/DB/3ZB2MAIQDXW59TH4RXNN2JLBQR0VL8/details

Industrie Service

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents. These documents have been used to cross-check project and confirm the validity of information given in the Category 1 documents and in verification interviews.

2-1	Extract from the passport of gas analyzer No. 328 type GAMMA-100 with calibration certificate dated 23/08/2006. Calibration certificate valid 1 (one) year according to certificate of recognition dated 09/08/2005.
2-2	Extract from the passport of gas analyzer No. 290 type GAMMA-100 with calibration certificate dated 23/08/2006. Calibration certificate valid 1 (one) year according to certificate of recognition dated 09/08/2005.
2-3	Extract from the passport of gas analyzer No. 294 type GAMMA-100 with calibration certificate dated 23/08/2006. Calibration certificate valid 1 (one) year according to certificate of recognition dated 09/08/2005.
2-4	Certificate of recognition for gas analyzer type GAMMA-100 dated 09/08/2005. Certificate issued by State Committee of Ukraine on Technical Regulation and Consumer Policy Questions.
2-5	Extract from the passport of gas analyzer with information about accuracy.
2-6	Contract between owner of the Sukhodilska-Skhidna mine OJSC "Krasnodonvugillya" and State-run Enterprise "LuganskStandartMetrologiya" on calibration service. Contract No. 77-U/01-8 dated 02/01/2008.
2-7	Accreditation certificate of State-run Enterprise "LuganskStandartMetrologiya". Certificate No. ПК015-2004 valid from 10/08/2004 until 10/08/2009.
2-8	Quality certificate for old boiler No. 3408 with information about efficiency of the boiler.
2-9	Summary of the test reports on gas content at the Sukhodilska-Skhidna mine dated 27/02/2009. Reports issued by Research Institute "RESPIRATOR" and dated 28/11/2006, 07/10/2007, 25/02/2008, 25/02/2009.
2-10	Protocols of technical checkup of the boiler No. 4 type KE-10-14C dated 02/03/2009. Protocol issued by CJSC "KotloEnergoProekt".
2-11	Extract from the passport of new boiler No. 4 type KE-10-14C with information about efficiency of the boiler.
2-12	Design study of the flow meter dated 10/05/2006.
2-13	Mining plan with installation diagram of surface degasification pipeline.
2-14	Extract from "Theoretical bases of heating engineering. The technical experiment. Reference book", Volume No. 2, Moscow, ENERGOATOMIZDAT, 1988.
2-15	Extract from the passport of flow mater No. 703568 type SAPFIR-22DD with calibration certificates.
2-16	Extract from the passport of flow mater No. 67710 type SAPFIR-22DD with calibration

	certificates.
2-17	Calibration certificates of gas analyzer No. 294 type GAMMA-100.
2-18	Analysis of conservativeness between the conservative approach that was chosen by PPs, using minimum and maximum recorded values to represent the worst case scenario, and an alternative approach, using average values. Dated November 16, 2009
2-19	Enclosure to the analysis of conservativeness (IRL No. 2-23), xls sheets with calculations, October 28, 2009, version 1.7.
2-20	Standard GOST 8.586-3-2005 "State system for ensuring the uniformity of measurements. Measurement of liquids and gases flow rate and quantity by means of orifice instruments. Part 3. Nozzles and Venturi nozzles. Technical requirements".